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ABSTRACT

The "Give and Take" economic series, developed by the Joint Council on Economic Education for junior high school students, was found to have a positive and significant impact on learning and attitudes. Three eighth grade classes from Texas City, Texas, participated in the study. One class received instruction using the "Give and Take" series; a second class received conventional instruction in economics; the third class received no economics instruction. The test from the "Give and Take" series was used to assess cognitive impact; an attitude instrument was also administered. Pre- and posttest results were compared. Data concerning student sex, religion, and ethnicity were collected. Both the "Give and Take" series and the conventional mode of instruction in economics were found to have a positive effect on cognitive achievement. However, the conventional mode of instruction had a negative impact on student attitudes while the "Give and Take" series improved student attitudes towards economics. Sex, ethnicity, and religion were found to significantly account for some of the variance in pre- and post-attitude scores. Appendices contain the attitude instrument and "seek-n-find" exercises in economics. (RM)

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ED246003

AN EXPERIMENTAL TEST FOR THE IMPACT OF THE 'GIVE AND TAKE' ECONOMICS SERIES ALONG COGNITIVE AND AFFECTIVE DIMENSIONS

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INTRODUCTION

In the Fall of 1983 the Joint Council on Economic Education issued a request for proposals to conduct evaluations on the newly completed "Give and Take" series in economics. The goals of the research program were :

A. To provide research evidence on the cognitive and affective impacts of the "Give and Take" series on students and on sources of differences in the impact among students.

B. To provide information on the nature of the diffusion and implementation processes associated with introduction of the "Give and Take" series in schools.

This study analyzes the cognitive and affective impacts of the "Give and Take" series. Following the guidelines in the request for proposals, one experimental and two control groups are used. The normed "Give and Take" test is utilized to assess the cognitive impact, while the affective impact is assessed using an attitude instrument formerly tested in the economic education field prior to this study.

Standard tests for the differences in mean score and analysis of variance techniques are used to establish the impact of the series. In Section II the experimental design and data collection methods are discussed. Essentially, three classes of junior high school students are selected and the pre-post test results compared. Tests for the impact of other variables are also run. Section III presents the

statistical results for the study. The essential findings are that the "Give and Take" series has a positive and significant impact on learning and a positive impact on attitude. However, the conventional mode of instruction in economics also has an impact on learning, although the impact on attitude is negative. These and other results are reviewed in the final section. In sum, the "Give and Take" series has a significant impact on learning and on attitude. In comparison to other traditional modes of teaching economics it is not superior as to impact on learning but it does appear to enhance student attitude.

STRUCTURE OF THE STUDY

This study was conducted using three classes from two selected middle schools in the Texas City, Texas school system. All students are in the eighth grade. Each of the three instructors had seven sections daily of students that cut across all achievement levels from remedial to advanced. Two of the classes chosen, one for the experimental group and one for the first control group, are located at the same school. The third class, for the second control group, is located at an alternate school. The Texas City School System serves a population which can be described as industrial and managerial. The majority of people employed in the area work for various petrochemical-related industries.

Experimental Design

In order to conform to the structure required by the funding agency, one of the classes was chosen as the experimental group which received the "Give and Take" series. The second class, at the same middle school, was chosen as the first control group which received conventional instruction in economics. The third group, at the second middle school, received no economics instruction. The normed "Give and Take" cognitive instrument was administered to all sections in each class during the same week in the Spring of 1984. The attitude instrument was administered at the same time. Examination instructions to all sections were as similar as possible and all sections were monitored during the examination period.

The experimental group students thereafter viewed the "Give and Take" series tapes at the rate of two tapes per week. The tapes were viewed in the library of the school, which was a change in the learning environment for the students. Prior to each viewing, the instructor gave an overview of what would be presented in the tape to be shown that day. After the showing, the students were given exercises to complete for grading purposes (see Appendix B). The "Seek and Find" word exercises were designed and provided to the students to help reinforce the terminology and concepts.

The first control group was provided with the economics instruction which the instructor usually gave his classes in "social studies". The second control group was given no economics instruction. All three groups were administered the "Give and Take" and attitude instruments about seven weeks after the pre-test administration. Again, the tests were administered under researcher supervision.

Data Collection

The variables on which data were collected for each student were "Give and Take" pre and post test scores, attitude pre and post test scores, sex, religious preference and ethnic origin. The questions calling for the sex, religion and ethnicity information appeared on the attitude instrument. As a check for consistency, the responses to these three items were compared from the pre to the post test. Any obvious variations were checked and, if the responses could not be rectified, that student was

dropped from the sample. The attitude instrument appears as Appendix A. The pre-post data were paired so that a student not completing one of the sets of instruments was eliminated.

The students were asked to record their responses on computer forms which could be easily processed. No attempt was made to distinguish the various sections of an instructor's class. The assumption was made that the students came from a relatively homogeneous population with respect to academic ability. The data forms were processed by the university computing staff and placed into computer files for further analysis.

The scoring for the attitude instrument must be explained in more detail. Each of 14 Likert-scaled statements were to be addressed. The valuing of the possible responses was such that the choice of option 1 meant that the student strongly agreed with the statement. The choice of option 5 meant that the student strongly disagreed with the statement. Hence, the higher the value of the response, the lower the opinion of the student for the positively worded statements. The negatively worded statements had their response scale reversed. Hence, the higher the numerical value for the attitude score the more negative the opinion of the student toward economics.

DATA ANALYSIS

The data collected were subjected to a variety of statistical tests. The most elementary of the tests was a comparison of means for the pre and post "Give and Take" scores and attitude scores. Other t-tests were alsc run to check for selected differences among other score pairs. An analysis of variance on the "Give and Take" and attitude scores was done with respect to sex, religious preference and ethnic origin. Finally, some elementary regression models using the test scores were explored.

Tests of Significance

The data reported in Table 1 show the descriptive statistics for the pre-post test results for all three sections and both assessment instruments. Sample size was sufficiently close to or over 100 so that the standard values for the "t" statistic at the 95 and 99% confidence levels could be used for the tests of differences in means. All tests hypothesized that there would be no significant differences in means between the scores and applied a two-tailed test.

The data in Table 2 show the results from the selected t-tests. Of primary interest are the tests for pre to post score results. For the experimental group the increase in "Give and Take" scores was significant at the .01 level. For the attitude score the significance drops to .10 for the increase. This may still be regarded as statistically

reportable if one is willing to accept a once in every ten error. For the first control group, the increase in "Give and Take" scores was also significant at the .01 level. The attitude of the students actually became less positive for this class, although the change was not statistically significant. For the second experimental group neither the attitude nor the "Give and Take" scores changed significantly.

A futher look at Table 1 indicates that the first control group scored higher on the "Give and Take" instrument, on both pre and post administrations, than the experimental group. Tests for differneces in means were run on those pairings also. The the first control group score was significantly higher at the .01 level on the pre-test and significantly higher at the .05 level on the post-test than the experimental group. These findings raise questions about the assumption of homogeneity of the groups and about potential cross-over effects in the experimental design. The two classes were located next to each other in the building and both classes knew that the one was the experimental group. Communication among the students could have influenced the post-test score results. If the students in the first control group were academically more able, then the differences in score results could also be explained that way.

Additional t-tests were run for the "Give and Take" tests and the attitude scores between the experimental and second control groups. The only significant difference which appeared here was for the post "Give and Take" score where the experimental group scored significantly higher.

The overall results indicate that there is a significant increase in "Give and Take" scores for the experimental and first control groups, but not for the second control group, from pre to post adminsitrations of the normed instrument. There is an increase in the attitude of the experimental group which is significant at the .10 level but no significant change in attitude for the remaining groups. The first control group significantly outscored the experimental group in both pre and post administrations of the "Give and Take" normed instrument.

Analysis of Variance

Table 3 presents the data for ANOVA for th eexperimental group using both the "Give and Take" and attitude instrument scores, pre and post administrations, as the variables to be decomposed by sex, ethnicity and religion. Using the main effects model only, and a .10 level of significance there are six reportable values. For the "Give and Take" pre-test, ethnicity had a significant effect. For the attitude instrument pre-test both sex and religion accounted for some of the variance in the score. Finally, for the attitude post-test, sex, ethnicity and religion accounted for some of the variation in the score. For the "Give and Take" post-test none of the three "effects" were significant. In sum, it appears that the sexual, cultural and religious variables have an impact on attitude more than they do on achievement.

Regression Analyses

Two regression models were run to get some numerical measure of the explanatory influence for the selected variables. The two dependent variables were the post-"Give and Take" score and the post-attitude score. The independent variables were sex, ethnicity and religion for both equations with pre-"Give and Take" score in the achievement expression and pre-attitude score in the attitude expression. The overall R^2 for both equations was small (less than .3) although statistically signifi ant. The coefficients for the sex, ethnicity and religion variables were not significant at acceptable levels. The pre scores for each of the respective dependent variables were both significant. The models probably suffer from specification error due to the absence of ability, effort and other measures.

Table 1

Descriptive Statistics

	Pre-test Data		Post-test Data	
	Give and Take	Attitude	Give and Take	Attitude
Experimental				
Mean	11.98	43.05	16.38	41.64
Std. Dev.	3.39	8.82	6.63	7.87
Observs.	97	97	97	97
Control 1				
Mean	13.22	43.37	18.32	44.52
Std. Dev.	3.13	4.03	6.34	4.32
Observs.	102	102	102	102
Control 2				
Mean	12.90	42.70	13.56	41.34
Std. Dev.	4.79	8.91	5.11	7.29
Observs.	88	88	88	88

Table 2

Two-Tailed T-Test Results*

(Values are Significance Levels)

	Exper. Pre	Exper. Post	Cont.1 Pre	Cont.1 Post	Cont.2 Pre	Cont.2 Post
Exper. Pre	XXXXX	.01	.01	_____	not	_____
Exper. Post	.10	XXXXX	_____	.05	_____	.01
Cont.1 Pre	not	_____	XXXXX	.01	_____	_____
Cont.1 Post	_____	.01	.05	XXXXX	_____	_____
Cont.2 Pre	not	_____	_____	_____	XXXXX	not
Cont.2 Post	_____	not	_____	_____	not	XXXXX

* The northeast triangle reports the results for the 'Give and Take' achievement score T-tests and the southwest triangle reports the results for the attitude score T-tests. A dash indicates that no T-test was run for that pairing and the term "not" indicates that the difference in means was not statistically significant.

Table 3

ANOVA For Selected Variables in the Experimental Group

Variable	By Classification	Main Effect "F" Value	Sig. of "F"
Pre-test			
Give and Take	Sex	1.036	.316
	Ethnicity	2.019	.099*
	Religion	0.529	.591
Post-test			
Give and Take	Sex	0.110	.741
	Ethnicity	1.687	.161
	Religion	0.469	.627
Pre-test			
Attitude	Sex	3.696	.058*
	Ethnicity	0.826	.512
	Religion	2.765	.069*
Post-test			
Attitude	Sex	3.092	.082*
	Ethnicity	2.802	.031*
	Religion	3.952	.023*

* Significant at the .10 level

Table 4

Regression Models for the Experimental Class

(Standard Errors in Parentheses)

Independent Variables	Post-G&T Score	Post-Attitude Score
Intercept	6.58	23.30
Pre-G&T Score	0.91	____
	(0.18)*	____
Pre-Attitude Score	____	0.44
	____	(0.08)*
Sex	-0.78	0.87
	(1.09)	(1.25)
Ethnicity	0.23	-1.33
	(0.73)	(0.79)
Religion	-0.31	0.85
	(0.68)	(0.79)
R^2	0.23	0.27
Overall "F"	9.20	35.35
n	97	97

* Significant at the .01 level

SUMMARY AND CONCLUSIONS

The results from the study indicate that the "Give and Take" series in economics for junior high school students has a significant and positive impact on learning elementary economic material. The series also appears to have a significant (90% level of confidence) and positive impact on the attitude of the students viewing it. Given the structure of the experimental design used in this study, it cannot be concluded that the "Give and Take" series is superior to conventional modes of instruction for economics. However, there is evidence that the students' attitudes toward "Give and Take" are more positively affected than with conventional modes.

Tests for the differences in mean scores between and among the instruments' scores indicates that the first control group may have been more academically able than the experimental group. No checks were placed on student prior ability, so the impact of this possible effect remains in question. The experimental group did significantly outperform the second control group on the post-"Give and Take" administration.

Elementary main effects analysis of variance indicates that the variables sex, ethnicity and religion significantly account for some of the variance in pre and post-attitude scores. There is little evidence that these same variables affect pre or post-"Give and Take" performance. Multiple regression model versions indicate that the only significant explainer of the post-"Give and Take" score is the pre-score for that instrument and likewise for the post-attitude score. These models are naive and suffer from specification error.

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APPENDIX A

ATTITUDE INSTRUMENT

RESEARCH INSTRUMENT

Please mark your responses to each statement according to the following scale:

1 2 3 4 5

1 = strongly agree 2 = agree 3 = undecided 4 = disagree
5 = strongly disagree

_ _ _ _ _ 1. I enjoy reading articles concerning economic topics.

_ _ _ _ _ 2. I hate economics.

_ _ _ _ _ 3. Economics is easy for me to understand.

_ _ _ _ _ 4. Economics is dull.

_ _ _ _ _ 5. I enjoy economics.

_ _ _ _ _ 6. Studying economics is a waste of time.

_ _ _ _ _ 7. Economics is one of my most dreaded courses.

_ _ _ _ _ 8. On occasion, I read an unassigned work in economics.

_ _ _ _ _ 9. I would be willing to attend a lecture by an economist.

_ _ _ _ _ 10. Economics is a very difficult subject for me.

_ _ _ _ _ 11. Economics is one of my favorite courses.

_ _ _ _ _ 12. I use economic concepts to analyze situations.

_ _ _ _ _ 13. Economics is practical.

_ _ _ _ _ 14. Economic ideas are dumb.

Please respond to the following additional questions:

_ _ _ _ _ 15. Indicate your sex. 1=male 2=female

_ _ _ _ _ 16. Indicate your age in years. 1 =12-16 years 2 =17-21 years
3 =22 years or older

_ _ _ _ _ 17. Indicate your ethnic origin.
1 = Black 2 = Hispanic
3 = Caucasian 4 = Oriental
5 = Other (Please specify) _____

_ _ _ _ _ 18. Indicate your religious preference.
1 = Catholic 2 = Protestant
3 = Jewish 4 = Other (Please specify) _____

APPENDIX B

EXERCISES

SEEK-N-FIND

For Programs
One and Two

M A N Y S R G T R A D E O F F Z B C U
O H O S L N R I N R B C I D A A E Y A
N F R E E D O M B R I G Y T H I K T X
I R H C Q A W D O H D A C A S R U F H
E E O I T C T Q A E F F I C I E N C Y
Y E W O A T H R N C N K L S K T R K G
H H Z H E Q N O K I S K O O D I N U M
T S O C Y T I N U T R O P P O R H I M
H H T O F S C I A S O A C D R C O L J
R O I C I S H B B U Y T I R U C E S K
E W C C F A I C T J Y A L E L R I A Q
E T E Y C L S R B A D I B L U E R N P
A D Y T I R A S T E G D U B Z H S K O
Y A L T E R N A T I V E P U H C U T V
A L Y T I C R A C S R N C Y D K I T U

WORD LIST

SCARCITY
CRITERIA
CHOICES
OPPORTUNITY COST
BUDGETS
TRADE OFFS
PUBLIC POLICY
FREEDOM
EFFICIENCY
GROWTH
STABILITY
JUSTICE
SECURITY
ALTERNATIVE
DECISION

SEEK-N-FIND

For Programs
Three and Four

T K S L A U D I V I D N I I R
I Q J S E V I T A N R E T L A
S A V I N G S P Z L R E V Y T
O G A R F I E L D U V K G E E
P J A I R E T I R C Y Z G T E
E K H R P S E K E E H E N A F
D T S T G N I T S E V N I R R
F Y T I D I U Q I L W L W T E
O P P O R T U N I T Y C O S T
E A C U R R E N C Y N R R E U
T E K R A M Y E N O M E R R R
A T R O U B L E I P S D C E N
C C H E L P K N G E S I B T P
I A T M E J U L I C E T B N O
F R Y E Y T P N J U I C E I S
I D Z K I J S E C U R I T Y S
T S T D Y U A E T I L O P U Q
R E E G R A H C E C N A N I F
E R S E S N O O P Y S L Q R B
C T D E G I N O I T A L F N I

WORD LIST

SAVINGS

RATE OF RETURN

LIQUIDITY

RISK

CREDIT UNION

MONEY MARKET

CERTIFICATE OF DEPOSIT

OPPORTUNITY COST

INTEREST RATE

FINANCE CHARGE

CREDIT

ALTERNATIVES

CRITERIA

BORROWING

INSURED

INVESTING

INFLATION

INDIVIDUALS

CURRENCY

SECURITY

SEEK-N-FIND

For Programs
Five and Six

I N V E S T M E N T I N H U M A N C A P I T A L O
H I B D C R O D E O S E C I V R E S O S L I P Q K
O U L U A V E R L C H A R L E S H E E K R E R R Y
R E V C R P V Y D N A M E D D E V I R E D I O E N
S R E A E L O I L Y P P U P R E S I T L T V D A N
E A L T E R N A T I V E S H V O L I O A S N U P U
A T E I R T A S K N A T U R A L R E S O U R C E S
S U K O C R D L S T G R E E N C S B E F S J T R A
T Z V N H O U N E M P L O Y M E N T B H E P I E O
U O F I O S C H O O L A P A R E S O U K L A V M Y
P O N G I A Q B P C O D N E M F K G J P H C I M P
T T S O C Y T I N U T R O P P O B H A O N K T U P
U X Y S E C R U O S E R L A T I P A C L E I Y S A
C W S P J O Z S E A L S E C R U O S E R N A M U H

WORD LIST

DERIVED DEMAND

CRITERIA

INVESTMENT IN HUMAN CAPITAL

OPPORTUNITY COST

PRODUCTIVITY

NATURAL RESOURCES

HUMAN RESOURCES

CAPITAL RESOURCES

EDUCATION

UNEMPLOYMENT

ALTERNATIVES

CAREER CHOICES

INPUTS

OUTPUTS

GOODS

SERVICES

SEEK-N-FIND

For Programs
Seven and Eight

S A R A H N D E N N I S S Y Z A C
L A L T E R N A T I V E D M O R R
P O N O I S U L C X E N O N O H Y
R L C W X Y T I N U M M O C T C A
O V D A E M A A P O W A G I Y R O
P U O E L E C B R W L G D O U A N
O T O S R T S Y I D E E E O D M O
P C C R E S S I V E T A X E S A M
T S C S S Y S C A U E L I A N B T
I C I U N C T I T L G P M T E S N
O H L M O T A X E S T H E N E E E
N O S M I E T I G H O N E R I L H
A U U E T K E J O T Y F V N A A N
L L P R A R K L O H I I S R S P R
T C O P A A M N D T C T E L I N E
A S U N A M S Y T E A D R A I N V
X E X A T E V I S S E R G O R P O
E C O N O M Y M A F U N N Y I N G
S H A R E D C O N S U M P T I O N

WORD LIST

MARKET SYSTEM

PUBLIC GOOD

PRIVATE GOOD

SHARED CONSUMPTION

MIXED GOODS

TAXES

PROGRESSIVE TAXES

REGRESSIVE TAXES

PROPORTIONAL TAXES

NON-EXCLUSION

BENEFITS

ALTERNATIVES

COMMUNITY

SERVICES

TAXATION

FEDERAL

ECONOMY

GOVERNMENT

STATE

LOCAL

SEEK-N-FIND

For Programs
Nine and Ten

S U B S T I T U T E N D O G A
S T I F E N E B U O C A T T E
R A E D D U C K I D G F E H G
T E C E N T P T C O H K E O A
B R L Y A O I I R S R E S R T
E I V L M T R F E A U E A S R
S E D P E E T O M C O W E E O
A S S P D S P R I C E S R A H
E O M U R R T P R O D U C T S
R O I S D E M O C N I A N T E
C M R U T Y B D R I B L I S I
E K A N S U R P L U S R E E D
D T A O G B L Y T I T N A U Q

WORD LIST

demand
supply
competition
surplus
shortage
profit
buyers
sellers
prices
income
products
increase
decrease
quantity
benefits
market
substitute

SEEK-N-FIND

Programs 11 & 12

E Z S R E M U S N O C
R A S E C I V R E S X
U Y L O P O N O M R Y
T T C L O D N A M E D
C I A I P R N P T L S
U F N G C N O R U L S
R E U C O S I O S E U
I N Y P D C T U T S P
S E A G B R I U I Q P
T B O L E D T C F T L
E G S Y T I E T E I Y
A K U I T C P S N F P
R R L B O H M E E O R
A M U S O G O F B R V
M S T N S E C I R P P

WORD LIST

substitute

demand

supply

market structure

competition

monopoly

oligopoly

sellers

buyer

profit

prices

products

consumers

goods

benefit

services

cost